

WPI

TI - DC=AC converter - has switched capacitor circuit that connects capacitors with different output voltages in series, to produce output voltage that is more than combined capacitor voltage

AB - J10042576 The converter includes a switched capacitor circuit connected to a load which connects one or more sets of cells contained in a bridge circuit that inverts the polarity of a capacitor functioning as a voltage source and capacitors (C1-C3) connected in series. A charging circuit charges the capacitor of a cell parallel from a voltage source. An AC output is then supplied to the load by connecting in series the number of capacitors per cell which have similar polarities.

- The capacitor circuit then connects in series the capacitors with different output voltages to produce an output voltage that is more than the combined capacitor voltage.
- ADVANTAGE - Does not use large resonance. Obtains high-frequency AC output by boosting DC voltage source. Minimises output of sine-wave type harmonic distortions using small filter circuits. Simplifies circuit structure and control by combining capacitors with different output voltages. Reduces entire chip area of switching elements provided for capacitor circuit since resistance of elements can be set low when integrating element on semiconductor.
- (Dwg.1/21)

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PA - (MATW) MATSUSHITA ELECTRIC WORKS LTD

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DC - U24 X12 X26

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PAJ

TI - POWER CONVERTER

AB - PROBLEM TO BE SOLVED: To enable setting the breakdown voltage of switching elements to a low value and further reduce the sum of the chip area of the switching elements, by series-connecting a combination of cells which differ in output voltages, and making a switched capacitor circuit output a voltage higher than that of the cells in the combined number.

- SOLUTION: Three capacitor cells SC1, SC2, SC3 are used, and capacitors C1, C2, C3, C4 are charged at a voltage different from the direct-current supply voltage. These are combined to reduce the number of switching elements, and yet positive and negative voltages in five levels are generated. This enables reducing the number of switching elements and simplifying a control circuit, and enables the reduction of supply voltage and the breakdown voltage for each switching element.

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